#13/Brief 9/7/02

PATENT APPLICATION

184

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Hiroyuki MATSUMOTO, et al.

Docket No: Q57465

Appln. No.: 09/558,334

Group Art Unit: 1733

Confirmation No.: 9218

Examiner: A. Johnstone

Filed: April 26, 2000

For: PNEUMATIC TIRE AND PROCESS FOR MOUNTING TIRE ONTO VEHICLE

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192

Commissioner for Patents
Washington, D.C. 20231

Sir:

Appellants' respectfully appeal a Final Rejection dated January 2, 2002. A timely Notice of Appeal was filed on July 1, 2002.

I. REAL PARTY IN INTEREST

This application is assigned to Bridgestone Corporation. Bridgestone is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant, the Appellants legal representative or assignee, which will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

This application contains claims 1-11. Claims 1-11 are all pending.

Claims 7-9 have been deemed to be allowable and thus are not a part of this appeal. The claims appealed are claims 1-6 and 11.

Claim 10 has been withdrawn from consideration and cancelled pursuant to a Restriction Requirement

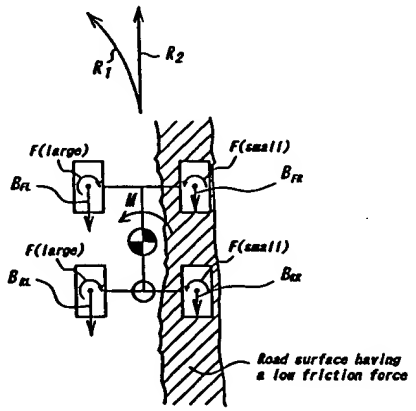
IV. STATUS OF AMENDMENTS

Appellant filed an Amendment subsequent to the final action on June 3, 2002. The Examiner, by Advisory Action dated June 24, 2002, entered that Amendment.

V. SUMMARY OF THE INVENTION

This invention is directed to a radial tire technology and in particular, to a specific improvement in the tire to improve braking performance of the vehicle as a whole so that the stability of the vehicle, for example its tendency to lean in one direction is reduced. By reference to Figure 4, reproduced below, and the description on page 12, beginning at line 17, the problem solved can be identified.

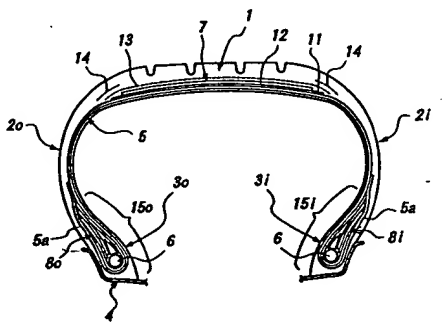
FIG. 4



Specially, as shown in Figure 4, a vehicle has four tires labeled B with subscripts delineating front and rear tires together with right and left tires. When a breaking force is applied, for example when the car is operating on a snow or ice covered road, the braking forces are identified by the arrows and they are different from right to left tire as a function of the tire construction. The reason is a difference in the shearing rigidity in the circumferential direction between sidewall portions of the tire, which are closer to the tire center of gravity and those which are further away. This creates a so-called yaw moment, which is illustrated in Figure 4 by the rotational arrow (M). As a result of the difference in braking force between the left and right wheel tires this moment is created. The running direction of the vehicle then changes from the straight line R_2 to a curve line R_1 (see page 13, lines 1-5).

This invention solves the problem in the context of a radial tire by the application of a reinforcing member, which applies a differential braking force to the tire as a whole, one which is larger in a first zone located on the outside of the vehicle than in a second zone, which is disposed on the tire relative to the inside of the tire relative to the vehicle. The invention is depicted in Figure 1, which is illustrated below. Further details are also shown in Figure 2.

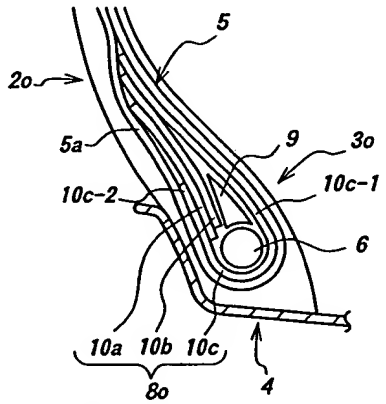
FIG. 1



By reference to page 8 beginning at line 9, this radial tire shares common elements with generalized radial tire construction. That is, it has a tread portion 1, sidewall portions 2, which extend from the tread to a bead portion 3, the tire having a radial carcass 5, which is wrapped around bead cores 6. Also with conventional radial tire construction, is the provision of a multi layer belt 7. This belt layer comprises several layers, in the case here, two layers 11 and 12 (page 8, lines 25-26). Other elements of the tire construction such as a cap member 13, which is a wide-width layer and a narrow-width layer 14, maybe disposed as a part of the belt and its reinforcing structure. The construction of the belt and its reinforcing structure is not a part of this invention (page 9, lines 3-5).

Specifically, in accordance with this invention, as illustrated in Figure 2, depicted below,

FIG. 2



reinforcing member 8 comprising three different discrete layers 10a, 10b and 10c are provided in the bead region wrapped around the bead core 6 and encapsulating a bead filler 9. A turn-up

portion of the carcass 5a forms an extension of the carcass 5 wrapped from the inside of the tire to the outside.

As illustrated in Figure 2 and described on page 10, lines 1-15, a first zone 15o (see Figure 1) is located based on tire mounting on the outside of the vehicle. This zone contains layers 10a and 10b with the gradual decrease in thickness outward in the radial direction and a reinforcing layer 10c, which forms a turn-up layer in the sense it wraps around the bead 6.

A second tire zone 15i is established as illustrated in Figure 1, and it contains the reinforcing member 8i, which is disposed on the inside of the tire relative to the vehicle. Such is illustrated relative to Figures 3a and 3b. Reference is made to page 11 beginning at line 15 and Figure 3a, which illustrates how a difference in shearing rigidity in the circumferential direction is attained on a left-wheel tire. The two tire zones, outside and inside, are designated by the number 2_o and 2_i. The reinforcing member 8_o is located in the first tire zone 15o, as illustrated in Figure 1. The reinforcing member 8i is located in zone 15i at the inside of the tire relative to the vehicle. In the tire then, upon the application of a breaking force B_L, is illustrated in Figure 3b, the amount of deformation differs from outside to inside of the tire. Specifically, on the outside of the tire only a slight amount of deformation occurs, while on the inside of the tire, a larger shearing deformation in the circumferential direction occurs. The result then is that as illustrated in Figure 3b, the ground contact area, which is shown in the Figure is not symmetrical to the center line of the tire. It is larger on the inside than on the outside, the reason being that on the inside of the tire a larger shearing deformation occurs and therefore, the area of the tire

contacting the ground is larger. The frictional force is thus larger on the inside relative to that of the outside (see page 11, lines 24-28 to page 12, lines 1-6).

This invention is defined by the claims on appeal, which are reproduced in the appendix that is attached.

VI. ISSUES

Whether claims 1-6 and 11 are anticipated under 35 U.S.C. § 102(b) by UK 1,115,834?

VII. GROUPING OF CLAIMS

Claim 1 is the sole independent claim in the case to which this appeal pertains (claim 10 has been withdrawn from consideration pursuant to a Restriction Requirement. This appeal can be decided based on the patentability of claim 1).

VIII. ARGUMENT

This sole ground of rejection here to claims 1-6 and 11 is anticipation under 35 U.S.C. § 102(b). For the Examiner to prevail on that rejection, the prior art reference must affirmatively disclose either expressly or inherently each and every limitation of the claims. The prior art is interpreted from the context of the artisan having ordinary skill, applying conventional wisdom and knowledge to the understanding of and application of the prior art. Should the prior art not contain that level of affirmative and enabling disclosure, the rejection must be reversed.

There are two reasons why the rejection should be reversed:

[1] the reference does not disclose the required structure, requiring that the reinforcing elements extend from the bead portion of the tire into the sidewall portion, and

[2] the reference provides no basis to conclude that a differential shearing rigidity exists.

As to the first contention the Examiner errs in concluding that a flipper component of "conventional dimensions" would extend from bead into sidewall. The reference itself undercuts that conclusion.

As to the second contention, the Examiner agrees that the limitations of the claims are not affirmatively unambiguously disclosed either by written text or drawing. Rather, the Examiner contends that the reference in Figure 5 would inherently satisfy the requirement of shearing rigidity in claim 1 because one of the structural elements of that prior art, namely a bead filler or "flipper" is longer on one side of the tire than on the other.

Thus, the starting point in the analysis to discern whether the Examiner's rejection has merit, is then to discern the scope and content of the prior art. Figure 5 of UK 1,115,834, the figure relied upon by the Examiner, is reproduced below.

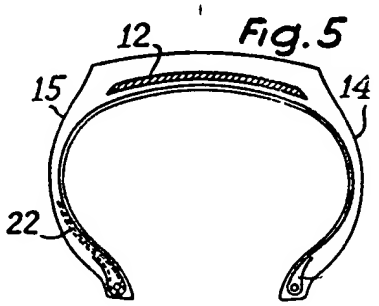


Figure 5, like the other embodiments of the '834 reference deals with radial ply tire construction utilizing carcass 10, beads 11, breaker or belt layer 12 and tread layer 13. Sidewalls 14 and 15 are identified, which as the reference discloses have a certain degree of flexibility, which makes them sensitive to transverse strains (page 1, lines 26-37). The purpose of the '834 patent is thus to reduce the lateral flexibility of the tire so that when mounted, lateral movement on the tire on the rim is reduced. The more flexible side portion of the tire is placed outside relative to the vehicle, but it is recognized that in certain situations, a reverse mounting can be adopted, that is the more flexible the side portion of the tire placed on the inside (page 1, line 68). The Examiner relies on the Figure 5 embodiment, which is described on page 2, lines 96-104. The sidewall 15 is described there as rendered stiffer by reinforcing its radial inner part with the aid of a flipper strip 22. This is illustrated in Figure 5 and which it is also depicted that the opposite side either does not have any flipper at all or one "of ordinary dimensions". The purpose then by having a flipper 22, which extends sectionally higher than that of a flipper (or the absence of any reinforcement in the bead region) on the other side is to provide a sidewall, which is stiffer than that of the opposite sidewall 14.

A. The Prior Art Does Not Provide for Reinforcing Elements extending into Both Tire Sidewalls

Claim 1 requires, that as one limitation, the tire have a reinforcing member arranged in a tire zone, which includes at least each of the sidewall portions. The requirement of claim 1 is that a reinforcing member exist in both sidewalls, not merely only on one side. The Examiner acknowledges that requirement by relying on the text in the reference which identifies that a

flipper can be provided in each bead region. As clearly demonstrated in the drawing and the text, the '834 reference does not arrange the flippers in both sidewall portions. The text expressly indicates that only on the sidewall portion 15, does the flipper 22 extend. The text and drawing are completely supportive of this conclusion by stating on lines 100-103 on page 2, that the flipper strip 22 extends "into this sidewall whilst the other bead of the tire does not comprise any flipper or only a flipper of ordinary dimensions".

The outcome determinative issue is whether on the right hand side of the tire of Figure 5, if a flipper was used, how far would it extend? The reference itself provides the answer. First, it indicates that no flipper is required and secondly, if one were used it would be "one of ordinary dimensions". The phrase of "ordinary dimensions" in terms extension and what the dimension is relative to Figure 5 is not addressed. However, the '834 reference in its totality provides an answer, if a flipper of ordinary dimensions were used, it would not extend in to the sidewall. First, it is noted that the embodiments all show the carcass 11 as wrapped from inside to outside around the bead. This wrapping is shown in Figure 5 and that is conventionally recognized to be a wrapping and end of a turned-up portion of the carcass in bead region of the tire.

To the extent that a flipper is used then, Figure 4 of the reference shows a difference between a conventional and a non-conventional filler strip. The filler strips of Fig.4 and equivalent to the "flipper" of Fig. 5. The filler strip 20 of that embodiment is disclosed as extending "half way up the sidewall" (page 2, lines 88-91). That is the same as the left hand side of Fig. 5 relied upon by the Examiner. The other side region contains a filler strip 21, which

would be equivalent to "a flipper of ordinary dimensions". That strip 21 is "located in the region of the bead only". This would be the same as the right hand side of Fig. 5 with an element of conventional dimensions. Thus, in the Figure 4 embodiment, two different bead fillers are used 120, which clearly extends into the sidewall to provide the stiffening and the other, which does not extend into the sidewall but rather, is "located in the region of the bead only". This would be the bead filler 21, which would be understood by an artisan as the same as a flipper. It would be a flipper of "ordinary dimensions", one which does not extend into the sidewall layer.

Consequently, one of working skill when reviewing the '834 reference in its entirety would recognize that when there is a reference to a flipper of ordinary dimensions, it would be similar to the embodiment of Figure 4 in which the filler strips extend, one into the sidewall and the other remaining only in the bead portion.

Thus, in contrast to the Examiner's conclusion that the artisan would not recognize where the sidewall starts and the bead portions end, the '834 reference provides a ready conclusion that the Figure 5 embodiment, which is relied upon, would not employ reinforcing layers on both sides on the tire that both extend into the sidewall portion. Stated differently, there is no need to discern a finite dividing line between bead portion and sidewall portion. All that is required is the understanding that in the '834 reference, the flipper would not extend into the sidewall, where ever it begins. This is a first reason why the Examiner's holding of anticipation is erroneous and should be reversed.

B. The Prior Art Does Not affirmatively Disclose That the Structure Will Produce A Differential in Shearing Rigidity

C.

There is a second reason why the Examiner's holding is also flawed. Applicant's claims require that the shearing rigidity of the reinforcing member in the circumferential direction applies a specific braking force to the tire. The requirement of the claims is for a differential braking force in two different tire zones. Consequently, the reinforcing members are arranged on the tire so that when the tires are mounted on the vehicle, it will be large in the first zone located outside of the vehicle and greater than that in a second zone, which is located inside relative to the vehicle.

With respect to the Figure 5 embodiment relied upon by the Examiner, there is no indication whatsoever of any differential in shearing rigidity of member 22 in the circumferential direction. Given that lack of disclosure, the Examiner relies on inherency, that is a conclusion that while not affirmatively disclosed, the construction in the prior art would inherently lead to a conclusion that there is a difference in shearing rigidity in the two sidewalls of the tire. That conclusion, however, is not supported by the reference itself.

Reference is made to page 1, lines 65-68 of the reference where it is indicated, "the more supple sidewall of the tyre is preferably placed on the out board side of the vehicle but, in certain cases the reverse mounting can be adopted". A logical conclusion then is irrespective of the construction, the reference does not mandate any particular mounting direction. Rather, while a preferable side is indicated, a reverse mounting can also be adopted. Therefore, there is no essential requirement that the shearing rigidity of the reinforcing member in the circumferential direction is made larger in one tire zone located at an outside relative to the vehicle than in a

second zone located at an inside of the vehicle. Rather, while other dynamic qualities such as flexibility may exist, that does not lead to a conclusion that the shearing rigidity is also directly affected. The Examiner bears the burden of showing that in fact, the suppleness is directly related to shearing rigidity and that cannot be mandated from either this reference or any other teaching. Indeed, the reference mitigates against a conclusion of inherency that the Examiner seems to imply relative to Figure 5. As indicated, that embodiment utilizes a filler strip located only on the in board sidewall of the vehicle. It is constructed such that the rigidity of the reinforcing member is made larger at a tire zone located relative to an inside of the tire. The reason is set forth by the reference on page 1, lines 74-76. "In all of these drawings, the out board side of the tyres is located on the right hand of the drawings". The right hand side then, relative to the Figure 5 embodiment, is the one that does not have a flipper 22 but, if one were present it would be of minimal, ordinary size.

Consequently, the artisan, when reviewing this reference, would clearly recognize that the flipper strips or other reinforcements are positioned only on one side of the vehicle.

This leads to a clear difference in the dynamic operation of the tire, which one of working skill would clearly recognize. In this invention, a requirement exist that both sidewall members have reinforcements. A consequence then, is that the construction is one where the tires provide a difference in shearing rigidity in the circumferential direction during the application of a braking force. This occurs between both sidewall portions on the assumption that there is no

difference in rigidity except for that in the circumferential direction. That would be recognized by the artisan given the nature of the construction of this invention.

In the '834 reference, there is no consideration at all relative to maintaining stability during braking with such being maintained by a difference in shearing rigidity occurring in the circumferential direction between two tire zones. Thus, the Examiner's holding of inherency must fail, and therefore a second reason exist for reversing the rejection predicated on anticipation because there is no recognition that a difference in radial suppleness itself results in a difference in shearing rigidity in the circumferential direction of the tire. That is, while the reference discloses that the tire will have a degree of flexibility, that is suppleness or the ability to bend or flex in the radial direction, that does not in anyway deal with shearing rigidity in the a circumferential direction of the tire. Consequently, viewed alone, the '834 reference fails to anticipate Applicant's claims.

C. Other Prior Art of Record Supports Appellant

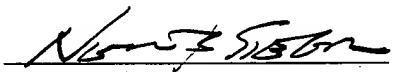
There is other prior art of record showing how bead elements are conventionally arranged. For example, U.S. Patent 3,536,188 clearly contrasts the constructions of Figures 1 and 5 relative to a reinforcement that exist in the case of the Figure 5 embodiment "extends from a bead wire 40 through the sidewall 41". Thus, the artisan would clearly recognize the different zones in general, bead reinforcement zones and sidewall and would never confuse a flipper or bead reinforcement of "conventional or ordinary dimensions" as one which would exist into the

sidewall portion of the tire. As such, the rejection predicted on anticipation should be reversed as contrary to a common and established understanding existing within the tire art.

The present Brief on Appeal is being filed in triplicate. Unless a check is submitted herewith for the fee required under 37 C.F.R. §1.192(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: September 3, 2002
(September 1, 2002 being a Sunday, and September 2, 2002 being a holiday)

APPENDIX

CLAIMS 1-6 and 11 ON APPEAL:

1. In a pneumatic tire comprising a tread portion, a pair of sidewall portions extending inward from both side parts of the tread portion in a radial direction, a bead portion continuously connected to an inner end of the sidewall portion in the radial direction, a carcass reinforcing these portions, a belt arranged on an outer circumferential side of a crown portion of the carcass, and a reinforcing member arranged in a tire zone including at least each of the sidewall portions, an improvement wherein a shearing rigidity of the reinforcing member in the circumferential direction, which serves to apply a braking force to the tire, arranged in the same tire at a posture of mounting the tire onto a vehicle is made larger at a first tire zone located at an outside of the vehicle than at a second tire zone located at an inside of the vehicle among the above tire zones.

2. A pneumatic tire according to claim 1, wherein the reinforcing member is arranged in the tire zone ranging from the bead portion to the sidewall portion.

3. A pair of mounted pneumatic tires according to claim 11, wherein the pair comprises left- and right-wheeled tires symmetrically located at both sides of the vehicle with respect to a center line of the vehicle in a widthwise direction and the tires are constituted so that the reinforcing members arranged in the first and second tire zones are symmetrical with respect to the center line in both tires.

4. A pneumatic tire according to claim 1, wherein the reinforcing member arranged in the tire zone is comprised of at least one rubberized cord reinforcing layer, and at least one of the number, width, cord stiffness and end count in the cord reinforcing layer as the reinforcing member arranged in the first tire zone is made larger than the respective one in the cord reinforcing layer as the reinforcing member arranged in the second tire zone in the same tire.

5. A pneumatic tire according to claim 4, where the reinforcing member is comprised of plural reinforcing layers, cords of which layers being crossed with each other.

6. A pneumatic tire according to claim 5, wherein at least one of the reinforcing layers constituting the reinforcing member is a turn-up reinforcing layer wound around a bead core embedded in the bead portion from an inside toward outside in a widthwise direction of the tire.

11. A pair of pneumatic tires mounted on a vehicle, each tire comprising; a tread portion, a pair of sidewall portions extending inward from both side parts of the tread portion in a radial direction, a bead portion continuously connected to an inner end of the sidewall portion in the radial direction, a carcass reinforcing these portions, a belt arranged on an outer circumferential side of a crown portion of the carcass, and a reinforcing member arranged in a tire zone including at least each of the sidewall portions, wherein a shearing rigidity of the reinforcing member in the circumferential direction, which serves to apply a braking force to the tire, is made larger at a first tire zone located at an outside of the vehicle than at a second tire zone located at an inside of the vehicle among the above zones.